

Application Serial No.: 09/734,591
Reply to Office Action dated July 30, 2004

REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-34 are presently active in this case.

The Applicant notes that the Official Action included a copy of Form PTO 1449 submitted with the Information Disclosure Statement and 11 References cited therein on December 13, 2000. Four U.S. references (U.S. Patent Nos. 5,973,792; 5,932,137; 5,646,744; and 5,832,137) listed on the PTO Form 1449 were crossed out without explanation. The Applicant requests consideration of the four U.S. references and an indication that those references have been received and considered as required by the MPEP.

In the outstanding Official Action, Claims 1-3, 5, 6, 12-14, 16, 17, 23-25, 27, 28, and 34 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. (U.S. Patent No. 6,285,470) in view of Fields et al. (U.S. Patent No. 5,767,945). Claims 4, 15, and 26 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. in view of Fields et al. and Jin (U.S. Patent No. 5,880,858). Claims 7-9, 18-20, and 29-31 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. in view of Fields et al. and Dhawan (U.S. Patent No. 5,271,064). Claims 10, 21, and 32 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. in view of Fields et al. and Saito (U.S. Patent No. 5,966,455). Claims 11, 22, and 33 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. in view of Fields et al. and Allen (U.S. Patent No. 6,044,172). For the reasons discussed below, the Applicant traverses the obviousness rejections.

The basic requirements for establishing a *prima facie* case of obviousness as set forth in MPEP 2143 include (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, (2) there must be a reasonable expectation of success, and (3) the reference (or references when combined) must teach or suggest all of the claim limitations. The Applicant submits that a *prima facie* case of obviousness has not been established in the present case because the cited references, either taken singularly or in combination, do not teach or suggest all of the limitations recited in independent Claims 1, 12, 23, and 34.

Claim 1 of the present application recites a color image processing method comprising, among other steps, the steps of edge-detection of a digital color original image, estimating background color of the paper or background color image on the single side with respect to a portion with low intensity of the detected edge, and performing color threshold processing in which the portion with the low edge intensity as a component corresponding to the show-through is replaced with the estimated background color or background color image in the original image.

Claim 12 recites a color image processing apparatus comprising, among other features, an edge detection unit which detects an edge in a digital color original image, a background color estimation unit which estimates a background color of the paper or a background color image on the single side with respect to a low-intensity portion of the detected edge, and an image replacement unit which replaces the low portion of the edge intensity as a component corresponding to the show-through with the estimated background

color or background color image in the original image.

Claim 23 recites a color image processing apparatus comprising, among other features, an edge detection means for detecting an edge in a digital color original image obtained by digitally inputting a single side of a document color-printed on both sides of paper, a background color estimation means for estimating a background color of the paper or a background color image on the single side with respect to a low-intensity portion of the detected edge, and an image replacement means for replacing the low portion of the edge intensity as a component corresponding to the show-through with the estimated background color or background color image in the original image.

Claim 34 recites a computer-readable recording medium storing a computer program containing instructions which when executed realizes the steps of edge-detection of a digital color original image obtained by digitally inputting a single side of a document color-printed on both sides of paper, estimating background color of the paper or background color image on the single side with respect to a portion with low intensity of the detected edge, and performing color threshold processing in which the portion with the low edge intensity as a component corresponding to the show-through is replaced with the estimated background color or background color image in the original image.

Each of Claims 1, 12, 23, and 34 recite inventions that include steps of apparatuses for edge detection, estimation of background color with respect to a portion with low intensity of the detected edge, and replacement of the low portion of the edge intensity as a component corresponding to the show-through with the estimated background color or background color image. Thus, the detected edge is an important aspect of the operation of the present

invention. (See, e.g., Figure 5 of the present application.) However, the Applicant notes that neither the Matsuda et al. reference nor the Fields et al. reference describe or suggest such edge detection.

The Matsuda et al. reference describes an image reading apparatus that generates a histogram regarding the brightness distribution of the reading surface based on the image data of the reading surface. The apparatus determines whether show-through exists on the reading surface depending on the difference between a mode brightness and a maximum brightness for preventing false detection of the base brightness cause by show-through effect. However, the Matsuda et al. reference does not detect the edges of the images, nor does the Matsuda et al. reference utilize this edge information in order to generate a show-through removed image. Instead the Matsuda et al. reference produces a histogram of the entire image in order to determine which portion of the image relates to the show-through image. The present invention is clearly distinguishable over the Matsuda et al. reference.

Furthermore, the Applicant respectfully submits that the Fields et al. reference does not supplement the deficiency noted above in the Matsuda et al. reference. In fact, the Fields et al. reference does not relate to show-through detection and removal, and the Fields et al. reference does not describe edge detection and utilization in the manner set forth in the independent claims of the present application.

Accordingly, the Applicant respectfully requests the withdrawal of the obviousness rejections.

Claims 2-11, 13-22, and 24-33 are considered allowable for the reasons advanced for Claims 1, 12, and 23 from which they respectively depend. These claims are further

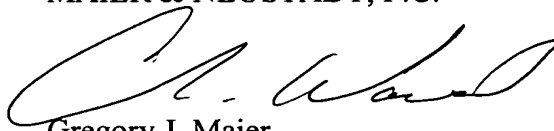
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considered allowable as they recite other features of the invention that are neither disclosed, taught, nor suggested by the applied references when those features are considered within the context of Claims 1, 12, and 23.

Consequently, in view of the above discussion, it is respectfully submitted that the present application is in condition for formal allowance and an early and favorable reconsideration of this application is therefore requested.

Respectfully Submitted,

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